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POST-ACQUISITION PERFORMANCE OF DISTRESSED TARGETS: EMPIRICAL EVIDENCE ON THE INFLUENCE OF STRATEGIC VERSUS PRIVATE EQUITY OWNERSHIP

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Abstract

Using regression analysis with Δ EBITDA margin, Δ Asset turnover, Δ Return on equity, and % Δ Revenue, as variations for the dependent variable, this research evaluates the influence of acquirer experience, deal size, and ownership types on post-acquisition performance. There was limited evidence that more experienced acquirers could lead to higher post-acquisition performance. Contrary to the hypothesis that larger deals would negatively influence post-acquisition performance, there was evidence suggesting a positive effect. Results for deal size and the acquirer experience highlight the complexities involved in distressed acquisitions. The analysis showed no significant differences between ownership types.

Keywords: Financial distress; Mergers and acquisitions; Distressed acquisitions; Post-acquisition performance; Private equity

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1. INTRODUCTION

In November 2020, Sycamore Partners acquired Ascena Retail Group, owning brands such as Ann Taylor and Loft, for $540m on a cash-free and debt-free basis (Reuters 2023). Previously, reaching annual sales of $5.57bn in 2018, the company filed for bankruptcy in July of 2020. Sycamore Partners' unit "Premium Apparel" committed to keeping a significant percentage of the more than 2,800 stores. Similarly, Aegean Airlines acquired the company Olympic Air in 2013 after the economic crisis in Greece had left the company struggling to remain competitive and finding itself in a deteriorating financial situation (Laub 2020). In the last years, countless distressed firms have been acquired by both strategic and financial buyers. Literature suggests that the acquisition of financially distressed firms results in abnormal returns in excess of returns from regular M&A activity (Meier and Servaes 2014). Even more so, some private equity firms have specialized in the restructuring of financially distressed firms and achieve higher returns for their investors (Bernstein, Lerner, and Mezzanotti 2019).

The resulting question that arises is whether these returns are created through value creation in the distressed target and as such can be observed through the lens of operation performance of the distressed firm after the acquisition. The study aims to find an answer to that question and examines other factors that influence the post-acquisition performance of financially distressed targets. By analyzing post-acquisition performance this research extends beyond more common analyses around acquisition success and abnormal returns. Applying this to the context of financial distress presents a novel approach that aims to unravel the extent of possible value creation when acquiring distressed targets. Observing a selected number of operational performance metrics, I find some evidence that acquirer experience may have a positive influence on post-acquisition performance. Contrary to the notion that larger deals involve more costly integration and complex restructuring in the context of distressed acquisitions, I found evidence suggesting that larger deal sizes lead to better post-acquisition performance of the

target, highlighting the available potential for financial restructuring and operational changes. Finally, this study analyzes whether financially distressed targets perform better under different types of owners after being acquired. Although results are directionally consistent with the idea that private equity owners may be more effective in achieving higher post-acquisition performance in the distressed target than strategic acquirers, my analysis does not yield the significant findings necessary for drawing a conclusion. Future research may investigate this further with a larger sample by relaxing the selection criteria or using other sources for data.

2. THEORETICAL FRAMEWORK

2.1. Financial Distress

Financial distress has been termed as a firm's condition wherein the probability that the firm may not be able to service the interest and principal on its debt becomes significant. Such a development is created by a decrease in a firm's earnings power (Gordon 1971). Similarly, Hendel (1996) uses financial distress interchangeably with "likelihood of bankruptcy", implying that financially distressed firms have limited access to liquid assets and new credit facilities. Research has highlighted numerous reasons to explain why certain firms become financially distressed.

Increasing leverage has been shown to lead to lower average costs of capital. However, excessive debt in a firm's capital structure may increase capital costs, as high principal and interest payments increase the risk of default. This is exacerbated when a firm's cash flows are volatile or suddenly decline (Terra 2008). Similarly, other operational and strategic issues have repeatedly been identified as leading to declining or volatile cash flows. Poor management accounting, forecasting, and strategies, as well as supply chain issues and a lack of skilled or experienced personnel, are some of the factors highlighted in the search for the single most important determinant of business failure (Hall 1992). Furthermore, ineffective corporate

governance can lead to a long-term deterioration of a firm's financial performance. Agency problems in the form of misaligned incentives can stipulate business decisions that are not in the interest of a firm's long-term performance. For example, payouts to shareholders reduce a firm's internal resources, whereby management must seek external financing for new capital-intensive projects which creates additional monitoring and, thus, limits management's influence. However, in their pursuit of power, management is incentivized to pursue growth beyond optimal levels (Jensen 2005). Further, mechanisms such as performance-based compensation induce short-termism whereby short-term performance is prioritized at the cost of long-term performance through costly bottom-line inflations (Stein 1989). Ultimately, environmental factors can also lead to a firm's demise as economic downturns can reduce consumer demand which has been found to be particularly detrimental in cyclical industries, or a firm's ability to raise new capital leading to a decrease in the firm's performance (Bernanke, Gertler, and Gilchrist 1996; Diamond and Rajan 2005). Moreover, industry-specific challenges in the forms of technological disruptions, increased competition, or a changing regulatory environment can also create an environment wherein the firm may no longer achieve the necessary level of cash flow to service its debt (Hitt, Ireland, and Hoskisson 2012).

The list of causes for financial distress is long, and as such the cutoff point for determining when a firm enters financial distress is not commonly agreed upon. While, next to a bankruptcy filing, the most explicit sign of financial distress may be a firm's default on its financial obligations, merely the violation of covenants may indicate that a firm may face difficulties in servicing its debt (Smith and Warner 1979). This is clearly seen by the often-extensive number of remedial actions available to lenders in case of breaches (Smith and Warner 1979). For public companies, a decrease in a firm's market value may signal that investors are concerned about a firm's financial performance (Merton 1974). Thus, a market-based approach taking the severity of such a decrease and other factors into consideration, may be employed to observe financial

distress (Reisz and Perlich 2007). Probably the most common approach would be to analyze the financial performance of a company. In its most simplistic form, this would equate to employing a traditional ratio analysis (Beaver 1966). However, as various researchers have prioritized a range of different indicators, the focus has shifted towards a multi-discriminant analysis (Lee and Choi 2013; Peres and Antão 2017). This mitigates problems caused by the reliance on univariate methodologies which can swiftly lead to faulty interpretation. Altman explains this using the example of poor profitability, which initially seems to be a useful bankruptcy indicator. Yet, if the liquidity of the firm is sublime, poor profitability may not necessarily indicate that the firm is in financial distress (Altman 1968). The Altman Z-Score model and its revised versions employ a multivariate approach to measuring the probability of bankruptcy, with each ratio assigned a different weight in terms of its importance. Altman's discriminant-ratio model demonstrated an ability to explain 95% of the variance in firms' bankruptcy risk (Altman 1968). In a review analyzing the predictive power of the Z-Score, Altman et al. (2014) find that in an international setting the model exhibits satisfactory predictive accuracy, averaging around 75% across most countries and exceeding 90% in certain cases. However, country-specific estimations can significantly enhance accuracy. In specific national contexts, the inclusion of additional variables has been shown to substantially elevate the level of classification accuracy (Altman et al. 2014). Similarly, other researchers have analyzed the Z-score model, applying it to financial data from 17 retail firms over two fiscal years. Consistent with existing literature, they found the Altman Z-score to be 94% accurate in predicting future financial risks and bankruptcy (Hayes, Hodge, and Hughes 2010).

2.2. Means of Escaping Financial Distress

Different options are available when a firm finds itself in financial distress. Having defined financial distress as the probable inability of a firm to service its financial obligations, mainly the principal and interest on the debt, restructuring the debt (in court or out of court) is a typical

way to attempt to restore the financial health of the firm (Baird 1986; Gilson 1997). This may include reducing current obligations, deferring payments, or replacing fixed repayment contracts with more flexible, equity-like securities. In addition, financial rebalancing can be achieved by raising liquidity through new claims on future cash flows. Issuing softer or longer receivables reduces the funding burden and helps to overcome financial distress, with private equity injections being a notable example (Hotchkiss et al. 2007). However, debt restructuring can lead to a holdout caused by a free rider problem, whereby creditors will wait for others to negotiate first hoping that they can get a better deal for themselves later (Gertner and Scharfstein 1991; Shleifer and Vishny 1992). Thus, it may be sensible for firms to turn to the possibility of public equity issuance (Shleifer and Vishny 1992). However, information asymmetries that make a fair assessment of the equity value difficult and the absence of effective control over assets can significantly increase the costs of raising equity (Myers 1984). Similarly, firms may also try to sell parts or the entirety of their assets to achieve the required liquidity. Asset sales may involve liquidation costs deductible from the going-concern value of the assets to be sold (Hotchkiss et al. 2007). Such indirect costs of financial distress have been highlighted in analyzing the concept of asset fire sales, whereby financially distressed firms sell assets at a discount that varies depending on the firm's urgency for a cash flow injection, the general environment, and the level of specialization of the asset (Pulvino 1998; Kim 1998).

2.3. Rationale for Acquiring Distressed Firms

Research has discovered numerous reasons as to why firms may engage in mergers and acquisitions. In his seminal work "The Nature of the Firm" Coase (1937) introduces the concept of transaction costs, challenging the notion that only series of price mechanisms facilitate market exchanges. He argues that a firm merely exists to internalize processes and structures to reduce transaction costs and organize production more efficiently (Coase 1937). However, there appears to be a trade-off between internal production and sourcing from the markets. Therefore,

appropriate governance structures are those that maximize economic efficiency and may range from the market itself to vertically integrated hierarchical firms (Gordon 1971; Hendel 1996). Thus, firms may engage in mergers and acquisitions as a means of vertical integration to reduce transaction costs when contracting in the markets is less efficient. Such a case can be made when a firm has significant capital invested in a transactional relationship with a financially distressed firm, whose critical asset specificity can lead to the acquirer's inclination towards vertical integration (Bjuggren 1995). Therefore, transaction cost economics does provide a reasonable explanation for why strategic buyers may want to acquire financially distressed firms in certain specific situations.

A more practical approach to explaining the rationale for mergers and acquisitions is the concept of synergies. These are often separated into revenue, cost, and financial synergies. Operating synergies in the form of revenue can arise from various sources. Increased market power from horizontal acquisitions, leading to greater pricing power, is a primary source (Damodaran 2011; Hitt et al. 2012). This enables the firm to demand higher prices, especially beneficial in markets sensitive to price fluctuations. Network externalities, such as the value of a product increasing with the number of users, may also contribute to revenue synergies (Hitt et al. 2012). Furthermore, acquiring complementary firms can enhance the value of the acquirer's offerings (Hitt et al. 2012). Damodaran describes network externalities and complementary acquisitions as the combination of different functional strengths (Damodaran 2011). Operational synergies in relation to costs can be achieved through economies of scale and other forms of operational efficiency such as consolidating headquarter functions, (Damodaran 2011; Hitt et al. 2012). The last type of synergy is financial in nature and may arise when a firm with excess cash acquires a company that has high-return projects but limited cash or vice versa when the debt capacity increases due to more stable and predictable cash flows, if there are tax benefits from the utilization of net operating losses, or due to potential benefits from diversification (Damodaran

2011). It is apparent that synergies are the most significant drivers for mergers and acquisitions from strategic buyers' perspectives as the combination of two firms with synergies is expected to yield a higher performance than both would have achieved independently (Sirower 1999; Signori and Vismara 2018)

Contrarily, it is often assumed that financial investors disregard strategic synergies (Fidrmuc et al. 2012). However, Hammer et al. (2018) and Morkötter and Wetzer (2015) challenge this view and show that for example, private equity firms with add-on strategies tend to pay a premium. This suggests that they recognize the value of synergies and apply both financial and strategic considerations to their investment decisions. Hotchkiss and Mooradian (1998) describe the significant magnitude of cost savings available when acquiring financially distressed targets, implying that synergy value can be high if operational improvements are substantial.

Another theory proposes that mergers and acquisitions may not always be driven by strategies that are directly cost-reducing or revenue-enhancing. The resource-based view posits that resources within an industry are not evenly distributed (Barney 1991; 2001). A firm's strategic resources can create a sustained competitive advantage if they are valuable, rare, imitable, and non-substitutable (Barney 1991). This suggests that a firm's assets can be reason enough for it to become the target of a takeover. Even if this theory does not directly point toward an explanation for financial buyers' motivation for acquisitions, identifying those firms in an industry with strategic resources and building champions around their sustainable competitive advantages may be a sound strategy for private equity firms (Sogorski 2018). This argument is exacerbated in the case of information asymmetries that create market inefficiencies. In applying the lemons problem by Akerlof to capital markets it becomes clear that if not resolved, some firms are incorrectly priced (Akerlof 1970). Thus, intermediaries are required, and private equity firms can be an example of such kind (Healy and Palepu 2001). Also, as certain assets are of high value according to the resource-based view, acquiring these from financially

distressed targets may pose an opportunity when fire sales lead to asset prices below fair market value. However, there have been mixed results on whether a firm's financial distress leads to the sale of assets at a discount or whether buyers simply perceive the price as discounted (Hotchkiss et al. 2007).

Finally, mergers and acquisitions may also be explained by agency theory. It shows that the separation of ownership and management can create conflicts when interests are not aligned (Berle and Means 2017). Although it may be the acquirer's management engaging in inefficient behavior such as empire-building for their own advantage, there is also an argument to be made that solving such conflicts in a target can create value. Aligning interests through significant equity stakes and incentive structures as well as implementing rigorous governance structures are means that have been perfected in the private equity industry (Jensen and Meckling 1976; "The New Financial Capitalists: Kohlberg Kravis Roberts and the Creation of Corporate Value" 1999). This suggests that firms that are in financial distress due to mismanagement may even allow for higher value creation when acquired as compared to non-distressed targets.

2.4. Development of Hypotheses

Following the arguments made for acquiring distressed targets and why distressed may want to be acquired, the following section delves into the performance of acquiring distressed targets. It discusses the differences between financial and strategic ownership based on existing literature. Drawing on transaction costs, Higgins and Schall (1975) establish a connection between conglomerate mergers and their effect on firm value, which depending on type of costs, frequency, and risk assessment can be positive. Also, it has been shown that acquiring distressed firms can enable efficient asset allocation allowing for substantial operating performance increases much in line with the thinking of the resource-based view (Hotchkiss 1995). Bruton, Oviatt, and White (1994) compare differences in the success of related and

unrelated acquisitions of distressed and non-distressed firms. They find that relatedness can explain acquisition success for distressed targets but not for non-distressed firms and conclude that distressed acquisitions are more meticulously planned and executed. In line with the research above they highlight how efficient management of assets allows for successful acquisitions.

However, they only investigate the acquisition success and not the post-acquisition performance of the target. Meier and Servaes (2014) find that distressed acquisitions result in abnormal returns for the acquirer at the expense of the target as assets are sold at prices below fair market value, but they do not explore whether the combination itself is accretive nor the post-acquisition performance of the target. Anna Faelten and Valeriya Vitkova (2014) come to a similar conclusion but show that distressed targets' shareholders tend to view such acquisitions positively. They show that such a reaction makes sense as they find evidence to suggest that the post-acquisition performance of the combined firm increased because of synergy realization between the strategic buyer and the target. Similarly, a study by Haw, Pastena, and Lilien (1987) has shown that the share prices of financially distressed firms recover more quickly when taken over than those of financially stable firms. Having alluded to the value creation mechanisms available and acting as the rationale for acquisitions, this research also includes financial buyers, such as private equity firms, and proposes that these achieve positive post-acquisition performance when acquiring distressed firms. The work of Hotchkiss and Mooradian (1995) illustrates how private equity firms implement effective operational and financial restructuring strategies. Additionally, Cao and Lerner's (2009) research provides evidence for post-acquisition performance improvements in distressed firms by financial buyers.

Mergers and acquisitions can confront firms with considerable issues in relation to integration. For instance, at an individual level, a manager's inexperience in acquisitions might lead to an escalation of commitment, culminating in finalizing deals at excessive costs (Rosenzweig,

Haspeslagh, and Jemison 1993). Furthermore, experience gained from previous acquisitions can foster effective processes for recognizing and amalgamating resources from the acquired firm, essential for achieving positive post-acquisition performance (Hitt et al. 1998). Previous experience in acquisitions has been shown to be a predictor of future acquisition success (Fowler and Schmidt 1989; Bruton, Oviatt, and White 1994). Bruton, Oviatt, and White (1994) show that prior acquisition experience is also positively associated with the success of the acquisition of financially distressed firms. Following this line of reasoning, this research aims to expand these findings to the post-acquisition performance of financially distressed targets.

H1: When more experienced, both financial and strategic buyers acquiring financially distressed firms achieve a higher post-acquisition performance of the target.

It has been proposed that larger deals could direct more of the management's attention toward the integration (Pitts 1980). However, in line with the reasoning on experience, larger targets are more difficult to integrate and restructure (Hotchkiss and Mooradian 1998). Further, Bruton, Oviatt, and White (1994) argue that distressed targets would receive management's attention regardless of size. Also, investigating shareholder gains, Alexandridis et al. (2013) found that acquisitions of large targets tend to be value-destructive. Generally, other streams of research such as signaling theory have regarded deal size as an essential variable when examining mergers (Gupta and Misra, 2007). Building on the literature, the following hypothesis arises:

H2: When the deal value is larger, both financial and strategic buyers acquiring financially distressed firms achieve a lower post-acquisition performance of the target.

Finally, this research aims to distinguish between strategic and financial buyers' ownership of distressed targets. There has been significant research highlighting the advantages of private equity ownership (Baker and Wruck 1989). Further, Bernstein, Lerner, and Mezzanotti (2019) have found that private equity-owned firms displayed lower levels of investment decreases and

higher growth than other firms during the financial crisis. Most importantly, Hotchkiss et al. (2007) show that private equity ownership decreases costs of financial distress through faster and more effective distress remediation than for distressed firms under other ownership.

H3: Financial buyers acquiring financially distressed targets achieve higher post-acquisition performance than strategic buyers acquiring financially distressed targets.

All the hypotheses are tested against: 1) *Δ EBITDA margin, 2) Δ Asset turnover,* 3) *Δ Return on equity, 4) % Δ Revenue*

3. DATA AND METHODOLOGY

3.1. Data and Sample

In exploring the stated hypotheses, I used a sample of 81 acquisitions to explore the post-acquisition performance of financially distressed targets. Following the approach of Altman et al. (2017), I sourced the initial deal data from the Orbis M&A database. Due to the scarcity of information on post-acquisition performance, I used a combination of Orbis' firm data and Compustat's Capital IQ data. When applicable, I cross-referenced data with firms' annual reports. The databases were chosen for their frequent use in notable academic publications (Opler and Titman 1994; Tykvová and Borell 2012). The selected period begins in 2000, as Orbis only contains deal data starting that year. Further, in line with a meta-analysis' finding that 20 out of 29 studies using return on assets had used a 3-year lag to measure post-acquisition performance, I opted for 2019 as the end of the timeframe (King et al. 2004). For the period of 2000 until 2019, Orbis includes 1,741,301 completed deals involving strategics and 339,277 private equity deals. Focusing on deals involving only European listed targets, minimum deal values of 50m or higher, and removing deals with multiple acquirers, persons, deals with non-disclosed information, and deals without transfer of control yield a sample of 710 acquisitions.

After excluding entries without BVD IDs of targets that are necessary for tracking financial data 208 private equity and 186 strategic deals remained.

As delineated in the theoretical framework and following Pastena and Ruland (1986), I employed the Z-Score to assess whether a target is in financial distress. The use of both public market and accounting data led to the exclusion of 302 deals due to missing data. Of the remaining 394 acquisitions, 118 were in financial distress which is equal to a percentage of 29.9% and, thus, slightly higher than the 23.6% found by Faelten and Vitkova (2015). However, their classification's reliance on the interest coverage ratio and this study's explicit inclusion of private equity targets may explain the difference. Last, compiling data on post-acquisition performance led to the exclusion of 33 acquisitions resulting in a final sample size of 81 targets (firms are not necessarily listed after the acquisition), of which 28 involve private equity ownership, while the remainder include strategic buyers.

3.2. Variables and Measurement

3.2.1. Dependent Variable

The research investigates post-acquisition performance and, thus, the dependent variables are measures to understand the degree to which the independent variables have an influence on it. I measure the post-acquisition performance using three ratios that describe different aspects of a firm's operational performance and compare how these have changed since the acquisition. Following comparable research, I use the *Δ EBITDA margin*, *Δ Asset turnover, Δ Return on equity,* and *% Δ Revenue* (Clark and Ofek 1994; Hotchkiss and Mooradian 1998; Anna Faelten and Valeriya Vitkova 2014). The EBITDA margin provides information on the company's core profitability by showing earnings before interest, taxes, depreciation, and amortization as a percentage of revenue, which illustrates the efficiency of the company's operating processes. The use of EBITDA helps to make the operating profitability of a firm more comparable as it

excludes assumptions and methodological differences about depreciation as well as financing costs and is in practice often regarded as a proxy for operating cash flows (D'Souza, Ramesh, and Shen 2010). Asset turnover measures how effectively the company uses its assets to generate revenue and thus provides information on the efficiency of asset utilization. Further, the return on equity reflects the company's ability to generate profits from its equity. It combines the effects of net profit margin, asset turnover, and financial leverage to provide a holistic view of financial performance and efficiency. To also examine top-line developments, I also include the percentage change in revenue, thus deviating from the absolute differences otherwise used. This allows for better comparability between larger and smaller firms.

Measuring operational performance improvements by directly comparing data at the acquisition completion date to three years afterward raises the question of whether such a scenario constructs a suitable counterfactual. Distressed firms may very well have continuously declining performance suggesting that a comparison between actual post-acquisition financials and the operational performance at deal completion is not appropriate. However, examining the sample firms' operational performance in the two years prior to and in the year of the acquisition does not lead to that conclusion. Counterintuitively, EBITDA margin and revenues appear to trend upwards when plotting the observations and using a trendline, while return on equity and asset turnover trend downwards. (see Graphs 1, 2, 3, and 4 in Appendix). In addition to analyzing the trendlines, I extrapolated each firm's average annual change in the ratios and revenue three years after their respective acquisitions and compared it to the actual post-acquisition performance difference. I found that 42.9% of all observations show EBITDA margin improvements, 49.4% have an increasing RoE, 50.6% have a higher asset turnover ratio and 41.6% of firms have a higher percentage change in revenues. Establishing such counterfactual and trendline analysis do not suggest any consistent trends that would make it less appropriate to examine post-acquisition performance success by comparing the

performance three years after the acquisition to the financials at completion. However, still acknowledging the relevance of this concern, I have also collected data on a control group consisting of 1151 listed firms falling under the same criteria of distress, time, size, and geography. Although most independent variables are acquisition-related and cannot be examined with the control group, I will later analyze deal size with the remaining firm-level variables. I have constructed an exemplary deal size using simple imputation with the median revenue multiple and the average acquisition stake from the sample. As this is rather imprecise but was the only applicable way to create meaningful interaction terms allowing to distinguish between acquired distressed firms and the control group, this methodology will only be used as a supplementary analysis.

3.2.2. Independent Variables

The research comprises three main independent variables as well as other independent variables functioning as control variables. In the theoretical framework, I hypothesized that financially distressed targets provide ample room for value creation and that distressed acquisitions are more carefully carried out especially when acquirers are experienced (*experience acquirer*). The experience is defined as the number of prior deals that the acquirer has completed before the acquisition of the distressed target in the sample. Since integration becomes more complex with a target's size and for distressed firms, and the restructuring needs also increase with size, I expect a negative relationship between *deal size* and the post-acquisition performance of financially distressed targets. All deal size values are in millions of Euros and transformed as natural logarithms. Both are expected to hold true for the entire sample containing both strategic as well as private equity owners. To investigate the effect of ownership types on post-acquisition performance, the last main independent variable is a dummy variable that distinguishes between strategic and private equity deals based on the Orbis M&A database. For the analysis, I noted strategic *ownership* equal to one and private equity *ownership* as zero.

Additionally, my analysis incorporates macro-level controls to address the influence of industry and country factors. Utilizing the Standard Industrial Classification (SIC) system, I grouped targets and acquirers in nine industry sectors (*industry target*). The industry effect is analyzed using dummy variables due to its categorical nature, with data sourced from the Orbis database. The last dummy variable is omitted in the analysis, with the specific industry groups detailed in Table 2. To consider the impact of country differences, I focused on *cultural distance* rather than using country-specific or cluster-based dummy variables. This approach was chosen due to the disproportionate number of observations relative to the diversity of countries involved (see Table 8 in Appendix). Cultural distance was quantified using Hofstede's cultural dimensions as per the country codes in the Orbis database (see Table 2 in Appendix). The distances were calculated using the Kogut and Singh index (Kogut and Singh 1988; Hofstede 2021). Following other research on post-acquisition performance which controls for target and acquirer size, I also include the *target size* as a control variable (Faelten and Vitkova 2014). It is defined as the natural logarithm of the acquirer's revenues in Euros from the latest accounting period before the deal completion. Collecting revenue data on the acquirers was not possible due to their country of incorporation or being a private company. Finally, I included the age of the target and the acquirer as control variables (*age target* and *age acquirer*). For a comprehensive interpretation of results from the regression analyses, continuous variables are transformed into standardized variables and interpreted accordingly.

4. RESULTS

4.1. Descriptive Statistics

Table 1 shows the descriptive statistics for the continuous variables (see Appendix). Using Z-scores to determine an observation's distance in terms of standard deviations from the mean, I removed two observations. On average, the financially distressed targets display a positive

absolute change in the Δ EBITDA margin of 3ppt when comparing post-acquisition data (three years after completion) with the financials at the deal completion. Similarly, asset turnover and return on equity ratios improve on average. The maximum possible change in an indicator can be found in the Δ Asset turnover ratio and % Δ Revenue. Although one might expect deal values to be similar or higher to target sizes, the sample set contains deals where the acquired stake is less than 100%, yet all deals involve the transfer of control. As expected, with deal values of 50m or higher, most acquirers have significant experience in the field of mergers and acquisitions. With the level of data transparency in the UK, it is also not surprising that the median Cultural distance is equal to zero, implying that there are numerous acquisitions where the acquirer and the target are from the same country. This is especially driven by transactions in the UK. All variables are positively skewed and leptokurtic and especially Size target shows a substantial departure from normality.

In Table 2 absolute and relative frequencies of categorical variables are listed (see Appendix). In line with the number of total strategic deals in the full dataset far surpasses private equity deals, approximately two-thirds of the final sample involve strategic ownership. Also, PE funds' practice of creating multiple ownership layers makes tracking post-acquisition performance significantly more difficult. As industry fixed effects in the context of financial distress have seen notable attention, controlling for their influence on post-acquisition performance, despite the concentration of firms in the sample from Manufacturing, Transportation, Electric, Gas & Sanitary Service, and Services, is highly relevant (Ang and Mauck 2009; Bruyland and De Maeseneire 2012).

Prior to testing the hypotheses of the study, it's important to check for potential multicollinearity issues among the independent variables. The correlations and variance inflation factors (VIF) for these variables are presented in Table 3. Notable correlations are between the variables, Deal size and Size target, with 0.61 and statistically significant at $p<0.01$ as well as between Age

target and Deal size (0.23, significant at $p<0.05$) and Age acquirer and Experience acquirer (0.24, significant at $p<0.05$). While this correlation is below the recommended threshold of 0.7, it's still necessary to examine its VIF to assess multicollinearity. Additionally, another significant correlation exists between Age acquirer and Size target at 0.22 ($p<0.1$). However, this does not raise immediate concerns over multicollinearity since the VIF values for all variables in question remain well under the cautious cut-off value of 5 for multicollinearity.

4.2. Model Estimation Results

The four variations of the dependent variable measure the change in operational performance after a financially distressed target was acquired and held for three years. The following section will examine the relationship between different independent variables and these performance ratios using linear regressions.

Table 4 (see Appendix) presents the regression analysis outcomes for models 1-9, each pair of models corresponding to a different dependent variable. Initially, I conducted the regression analysis without control variables to isolate the independent variables' effects. Subsequently, control variables were introduced in the following models to determine the consistency of these effects. Models 1, 3, 5 and 7 focus exclusively on the impact of the primary independent variables: Experience acquirer, the natural logarithm of Deal size, and Ownership type (with the dummy excluding PE-owned). Conversely, models 2, 4, 6, and 8 incorporate additional factors for a comprehensive analysis. The categorical control variable, Industry fixed effects, is represented through dummy variables, excluding “Agriculture, Forestry & Fishing.” Additionally, the continuous control variables included are Cultural distance, the natural logarithm of Target size, Age acquirer, and Age target.

In examining the post-acquisition performance with the change in the EBITDA margin using models 1 and 2 (referenced in Table 4, Columns 2 and 3), I observe insignificant intercepts with

0.03 for model 1 and -0.24 for model 2. Except for the constant, I find directionally consistent outcomes between model 1 and model 2. The variable Experience acquirer is not statistically significant in either model ($p>0.1$), thereby not supporting hypothesis 1, which posits a positive effect of a firm's previous acquisition on the post-acquisition performance of acquired targets that are financially distressed at deal completion. Conversely, the Deal size variable has a positive and significant coefficient in model 1 with $p<0.1$ but is insignificant in model 2 ($\beta=0.03$ in model 1 and $\beta=0.00$ in model 2). Based on model 1 this would suggest that a one-standard-deviation increase in Deal size is associated with a 0.03 standard deviation increase in the dependent variable, all else held equal. Using EBITDA margin as the performance indicator provides limited evidence for rejecting hypothesis 2. With regards to ownership type, however, models 1 and 2 do not provide significant evidence to suggest that there is a difference between private equity and strategic ownership. Though, it is noteworthy that the coefficient is negative and almost significant in model 1 ($\beta=-0.11$, $p=0.12$). If significant this would have provided evidence that targets under strategic ownership display a (more) negative change in performance post-acquisition compared to targets under private equity ownership, ceteris paribus. However, as this is not the case, there is no support for hypothesis 3. For all remaining models from Table 4, except model 7, I find no significant intercepts. Experience acquirer remains insignificant in models 3, 4, and 6, 7, and 8 ($p>0.1$). However, in model 5, using the change in return on equity, I find a significant positive coefficient, which indicates that there is limited support for hypothesis 1 ($\beta=0.06$, $p<0.1$). This finding proposes that a one-standard-deviation increase in the experience of the acquirer increases the change in the return on equity by 6 ppt, ceteris paribus. Model 6 provides some additional evidence for refuting hypothesis 2 with the Deal size variable being positive and significant although other models do not support this notion ($\beta=0.10$ in model 6, $p<0.1$), all else held equal. Again, I find no support for a difference between ownership types (hypothesis 3) although the p-value is again below 0.2 in

model 6. Another interesting observation can be found when looking at Size target in model 6 which is highly significant but negative (β=-0.20, $p<0.01$). This provides some support for the theory raised for hypothesis 2, which is that larger targets are more difficult to integrate. The sign difference to Deal size could relate to the difference in the acquired stakes within the sample. Hypothetically, large targets acquired with a 50.1% stake may lead to better post-acquisition performance than when fully acquired. Examining the percentage change in revenue does not help in drawing any other significant conclusions about the hypotheses, as none of the independent variables are significant except for Size target and Cultural distance in model 8 (β=-0.26, $p<0.05$; β=0.17, $p<0.1$). Albeit insignificant in model 8, Deal size may be economically relevant when looking at revenue. Here, a one-standard-deviation change in Deal size leads to an increase of 20ppt in the percentage change of revenue, ceteris paribus.

To confirm these findings, I tested sixteen additional models displayed in Tables 5 and 6 (see Appendix). In models 9-20, I ran a regression on each independent variable individually, combined with the control variables used throughout models 2, 4, 6, and 8 (Table 4). Singling out the independent variables in models leads to similar conclusions compared to those that I drew earlier. In the models with the change in the EBITDA margin (model 9-11), I find support for rejecting the second hypothesis, with a positive and significant Deal size coefficient (model 10: β=0.03; $p<0.1$). Using the asset turnover ratio offers no significant evidence for accepting or rejecting any of the three hypotheses (models 12-14). Moreover, using the absolute change in the return on equity ratio as the dependent variable and the percentage change in revenue offers additional support for the first hypothesis in line with earlier findings (model 15: β=0.06; $p<0.1$; model 18: β=0.03; $p<0.1$) and for refuting the second hypothesis (model 16: β=0.11; $p<0.1$). Especially noteworthy is the magnitude of the Deal size variable in model 16, as a one-standard-deviation change is associated with a 0.11 increase in the change in the return on equity, all else held constant. Next to the highly significant Size target control variable in models

15-17, 18, and 19, Cultural difference is positive and significant in five out of the sixteen models from Tables 5 and 6 suggesting that acquiring a target in a foreign country may help in achieving better post-acquisition performance, all else held constant. A possible reason could be that acquirers seeking to take over a firm in another country may be more diligent and cautious in the process allowing for better firm selection. Therefore, this may propose that the findings of a positive influence of cultural distance on acquisition performance could be extended to the context of financially distressed firms (Ahammad 2009). I have included models that only show control variables to examine whether they are significant predictors independent of the variables that relate to the three hypotheses. In line with models 9-20, I find that Cultural distance (Table 6: Model 21: $\beta=0.08$, $p<0.05$), Size target (Model 23: $\beta=-0.13$, $p<0.01$; Model 24: $\beta=-0.16$, $p<0.1$), and Age target (Model 23: $\beta=0.05$, $p<0.1$) are significant in some cases. However, their magnitude and signs are in line with earlier findings such that similar conclusions can be drawn.

Adding the control variables to the regression shows that they might have explanatory power for predicting post-acquisition performance as the r-squared increases significantly. Across all models, model 20 with the percentage change in revenue and with control variables, performs worst in predicting the dependent variable. Contrastingly, with an r-squared of 0.30 and an adjusted r-squared of 0.14, model 6 appears to be the best-fitting model. However, generally, all models with one or more independent variables and all control variables perform similarly well, with r-squared values of 0.19 to 0.30, except for models 8, 19, and 20. F-statistics are significant across most models apart from models 1, 3, 5, 7, 8, and 18-20.

As noted in the variable description section, I have conducted supplementary regression analyses (Table 7: Models 25-27) that investigate the impact of deal size and firm-level characteristics on financial performance indicators using a control group and interactions with an acquisition dummy. It excludes the percentage change in revenue due to the computation of the deal size imputation. Interestingly model 25 suggests that deal sizes are associated with

lower EBITDA margins (β=-0.13, p<0.01. This contradicts earlier findings and would be more in line with the second hypothesis. However, this adverse effect is mitigated in actual acquisition contexts (β=0.12, p<0.01). The acquisition dummy variable itself negatively affects change in EBITDA margins (β=-0.09, p<0.01), indicating that acquisitions tend to lower EBITDA margins, controlling for other factors. Models 26 and 27 show similar results for the other performance indicators in relation to deal size (model 26: β=-0.15, p<0.01; model 26: β=-0.50, p<0.01). The interaction term for Size target also suggests that actual acquisitions differ from the hypothetical scenario created by the counterfactual. Although the direction of Size target is different from earlier models the interaction term mitigates this effect.

5. CONCLUSION

5.1. Summary and Discussion of Results

The results are based on the regression analysis of several models, each examining different performance measures and including several control variables when applicable. Theory and anecdotal evidence would suggest that acquirers' experience and deal sizes are relevant when examining post-acquisition performance.

However, this study offers only limited help for accepting or rejecting the hypotheses that more experienced buyers acquiring financially distressed firms achieve a higher post-acquisition performance. Acquirers' experience was insignificant throughout most regression models. However, a positive effect was observed in three models, suggesting a potential, albeit slight, positive influence of acquirer experience on post-acquisition outcomes. Using standardized values helped to show that an acquirer's experience may have economic significance. Nonetheless, the complexities associated with acquiring and improving financially distressed firms, such as having to face declining profitability, increasing debt, and other operational problems while handling integration, highlight the involved level of unique complexity to each

deal that may not always be mitigated by being an experienced acquirer (Gordon 1971; Hall 1992; Terra 2008). Further, the limited evidence suggesting a positive influence of acquirer experience might also be explained by agency theory. Misaligned incentives and management inefficiencies in distressed firms can pose significant challenges that are not easily overcome by experience alone (Jensen 2005; Berle and Means 2017). Such a multitude of factors may make the post-acquisition performance of these firms less predictable, which could explain why acquirers' experience did not have a consistently significant impact in the regression models. In contrast, deal size was more consistently positive and significant across various models, and using the control group with the interaction showed that the effect differs between actual acquisitions and the control group. This implies that the magnitude of the acquisition could play an integral role in determining post-acquisition success. The positive and intermittent significance of deal size in the different models can be interpreted through the lens of the financial rebalancing strategies discussed in the theoretical framework. Larger transactions could provide more resources for restructuring debt, injecting liquidity, and implementing operational changes due to the necessarily large acquirer (Baird 1986; Gilson 1997; Hotchkiss et al. 2007). This study's findings and such explanations could suggest that contrary to the second hypothesis, larger deal values may positively influence the performance of a financially distressed target after the acquisition.

Finally, no marked differences were observed between acquisitions undertaken by private equity firms and strategic acquirers, challenging the central premise of the third hypothesis. This outcome questions the presumed innate ability of financial acquirers to secure superior post-acquisition results. The limited and sometimes negative results, coupled with a constrained sample size, suggest that a more comprehensive and differentiated approach could yield clearer insights that may even confirm this hypothesis. Albeit, lacking statistical significance in this study, the economic significance as shown using standardized variables is worth highlighting.

The lack of statistically significant differences in the post-acquisition performance of distressed targets between private equity firms and strategic acquirers can be contextualized by the discussion of synergies and resource-based strategies. Both types of acquirers may recognize the value of synergies and apply financial and strategic considerations in their acquisition decisions (Fidrmuc et al. 2012). Moreover, the resource-based view suggests that the strategic resources of a firm can be a significant factor in acquisitions, which may be similarly well deployed by both strategic and financial buyers (Barney 1991; 2001).

5.2. Implications and Limitations

The interpretation of the effects on the performance measures poses a particular challenge in this study. It is conceivable that companies may adopt strategies involving, for example, strategic investments at the cost of profitability. While this approach is potentially beneficial in the long term, it may not lead to immediate financial returns that can be observed within the three-year period considered in this analysis. This leads to a limitation in terms of the temporal aspect of measuring post-acquisition performance and emphasizes the need for a longer-term assessment to fully capture variables that influence post-acquisition performance.

This study's findings reveal that acquirers' experience may not be as pivotal in determining post-acquisition performance as one would initially expect. Although not denying its importance, the complexity inherent in distressed acquisitions suggests that managers may want to consider factors beyond experience when navigating such deals. As such this study adds a view suggesting the limited influence of acquirer experience in the field of distressed acquisitions as compared to the traditional view in mergers and acquisitions.

The findings on deal size's influence highlight some of the advantages of larger deals and may suggest that managers should rightfully invest considerable time in both the acquisition process

and post-acquisition value creation measures. Meanwhile, it extends existing findings on the importance of deal size as a variable in the field of performance of mergers and acquisitions.

The absence of significant differences between private equity and strategic ownership could suggest a more even playing field in the realm of distressed acquisitions than this study originally assumed as the number of opportunities for value creation are vast. However, other studies could very well find such differences as this study's sample size may not suffice in significantly establishing a benefit in private equity ownership. The focus on European studies and the use of the Altman Z-score for financial distress classification may have restricted the sample size, thus, implying that future research could benefit from a broader dataset and less restrictive sample selection. However, it must be noted that the data availability on financially distressed firms with post-acquisition performance data is very limited. Similarly, the geographic focus on Europe, public firms, and as such the prevalence of UK targets and acquirers due to their more accessible data may have limited the study's generalizability. Further, future research could look at earlier stages of takeovers, particularly how strategic and financial buyers build their initial value proposition in distressed acquisitions. This would provide insights into the available strategies for different ownership types and their influence on post-acquisition performance.

Finally, this study also illustrates the need for more precise theoretical frameworks that consider the multifaceted nature of financial distress. Future research could employ a broader approach by examining the role of capital structure, operational performance, governance, and environmental factors in the context of post-acquisition performance in a combined approach. This would provide a more accurate understanding of distressed acquisitions.

6. References

Ahammad, Mohammad F. 2009. “National Culture Distance and Cross Border Acquisition Performance.” *SSRN Electronic Journal*.

Akerlof, George A. 1970. “The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism.” *Quarterly Journal of Economics*.

Alexandridis, George, Kathleen P. Fuller, Lars Terhaar, and Nickolaos G. Travlos. 2013. “Deal Size, Acquisition Premia and Shareholder Gains.” *Journal of Corporate Finance* 20 (1).

Altman, Edward I. 1968. “Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy.” *The Journal of Finance* 23 (4).

Altman, Edward I., Malgorzata Iwanicz-Drozdowska, Erkki K. Laitinen, and Arto Suvas. 2014. “Distressed Firm and Bankruptcy Prediction in an International Context: A Review and Empirical Analysis of Altman’s Z-Score Model.” *SSRN Electronic Journal*.

Ang, James S., and Nathan Mauck. 2009. “Fire Sale Acquisitions: Myth vs. Reality.” *SSRN Electronic Journal*.

Anna Faelten and Valeriya Vitkova. 2014. “Who Gains from Corporate Rescues? Distressed M&A during Four Financial Crises.” *Cass Business School*.

Baird, Douglas G. 1986. “The Uneasy Case for Corporate Reorganizations.” *The Journal of Legal Studies* 15 (1).

Baker, George P., and Karen H. Wruck. 1989. “Organizational Changes and Value Creation in Leveraged Buyouts. The Case of the O.M. Scott & Sons Company.” *Journal of Financial Economics* 25 (2).

Barney, Jay. 1991. “Firm Resources and Sustained Competitive Advantage.” *Journal of Management* 17 (1).

Barney, Jay B. 2001. “Resource-Based Theories of Competitive Advantage: A Ten-Year Retrospective on the Resource-Based View.” *Journal of Management* 27 (6).

Beaver, William H. 1966. “Financial Ratios As Predictors of Failure.” *Journal of Accounting Research* 4.

Berle, A. A., and Gardiner C. Means. 2017. “The Modern Corporation and Private Property.” In *Modern Economic Classics-Evaluations Through Time*.

Bernanke, Ben, Mark Gertler, and Simon Gilchrist. 1996. “The Financial Accelerator and the Flight to Quality.” *Review of Economics and Statistics* 78 (1).

Bernstein, Shai, Josh Lerner, and Filippo Mezzanotti. 2019. “Private Equity and Financial Fragility during the Crisis.” *Review of Financial Studies*.

Bjuggren, Per Olof. 1995. “A Transaction Cost Perspective on Financial Distress and Capital Structure.” *International Review of Law and Economics* 15 (4).

Bruton, Garry D., Benjamin M. Oviatt, and Margaret A. White. 1994. “Performance of Acquisitions of Distressed Firms.” *Academy of Management Journal* 37 (4).

Bruyland, Evy, and Wouter De Maeseneire. 2012. “The Risk Effects of Acquiring Distressed Firms.” *SSRN Electronic Journal*.

Cao, Jerry, and Josh Lerner. 2009. “The Performance of Reverse Leveraged Buyouts.” *Journal of Financial Economics* 91 (2).

Clark, Kent, and Eli Ofek. 1994. “Mergers as a Means of Restructuring Distressed Firms: An Empirical Investigation.” *The Journal of Financial and Quantitative Analysis* 29 (4).

Coase, R. H. 1937. “The Nature of the Firm.” *Economica* 4 (16).

Damodaran, Aswath. 2011. “The Value of Synergy.” *SSRN Electronic Journal*.

Diamond, Douglas W., and Raghuram G. Rajan. 2005. “Liquidity Shortages and Banking Crises.” *Journal of Finance* 60 (2).

D’Souza, Julia, K. Ramesh, and Min Shen. 2010. “Disclosure of GAAP Line Items in Earnings Announcements.” *Review of Accounting Studies* 15 (1).

Fidrmuc, Jana P., Peter Roosenboom, Richard Paap, and Tim Teunissen. 2012. “One Size Does Not Fit All: Selling Firms to Private Equity versus Strategic Acquirers.” *Journal of Corporate Finance* 18 (4).

Fowler, Karen L., and Dennis R. Schmidt. 1989. “Determinants of Tender Offer Post-acquisition Financial Performance.” *Strategic Management Journal* 10 (4).

Gertner, Robert, and David Scharfstein. 1991. “A Theory of Workouts and the Effects of Reorganization Law.” *The Journal of Finance* 46 (4).

Gilson, Stuart C. 1997. “Transactions Costs and Capital Structure Choice: Evidence from Financially Distressed Firms.” *Journal of Finance* 52 (1).

Gordon, M. J. 1971. “Towards a Theory of Financial Distress.” *The Journal of Finance* 26 (2).

Gupta, A., and Misra, L. 2007. Deal Size, Bid Premium, and Gains in Bank Mergers: The Impact of Managerial Motivations. *Financial Review* 42(3).

Hall, Graham. 1992. “Reasons for Insolvency amongst Small Firms - A Review and Fresh Evidence.” *Small Business Economics*.

Hammer, Benjamin, Nils Janssen, Denis Schweizer, and Bernhard Schwetzler. 2018. “Do Private Equity Firms Pay for Synergies?” *SSRN Electronic Journal*.

Haw, In Mu, Victor Pastena, and Steven Lilien. 1987. “The Association between Market-Based Merger Premiums and Firms’ Financial Position Prior to Merger.” *Journal of Accounting, Auditing & Finance*.

Hayes, Suzanne K, Kay A Hodge, and Larry W Hughes. 2010. “A Study of the Efficacy of Altman’s Z To Predict Bankruptcy of Specialty Retail Firms Doing Business in Contemporary Times.” *Economics & Business Journal: Inquiries & Perspectives* 122 (1).

Healy, Paul M., and Krishna G. Palepu. 2001. “Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Disclosure Literature.” *Journal of Accounting and Economics* 31 (1–3).

Hendel, Igal. 1996. “Competition Under Financial Distress.” *The Journal of Industrial Economics* 44 (3).

Higgins, Robert C., and Lawrence D. Schall. 1975. “Corporate Bankruptcy and Conglomerate Merger.” *The Journal of Finance* 30 (1).

Hitt, Michael A, R Duane Ireland, and Robert Hoskisson. 2012. *Strategic Management Cases: Competitiveness and Globalization*. *Cengage Learning Academic Resource Center*.

Hitt, Michael A., David King, Hema Krishnan, Marianna Makri, Mario Schijven, Katsuhiko Shimizu, and Hong Zhu. 2012. “Creating Value Through Mergers and Acquisitions.” In *The Handbook of Mergers and Acquisitions*.

Hitt, Michael, Jeffrey Harrison, R. Duane Ireland, and Aleta Best. 1998. “Attributes of Successful and Unsuccessful Acquisitions of US Firms.” *British Journal of Management* 9 (2).

Hofstede, Geert. “Compare countries”. 2023. https://www.hofstede-insights.com/country-comparison/.

Hotchkiss, Edith S., Kose John, Robert M. Mooradian, and Karin S. Thorburn. 2007. “Bankruptcy and the Resolution of Financial Distress.” In *Handbook of Empirical Corporate Finance SET*. Vol. 1.

Hotchkiss, Edith S., and Robert M. Mooradian. 1998. “Acquisitions as a Means of Restructuring Firms in Chapter 11.” *Journal of Financial Intermediation* 7 (3).

Hotchkiss, Edith Shwalb. 1995. “Postbankruptcy Performance and Management Turnover.” *The Journal of Finance* 50 (1).

Jensen, Michael C. 2005. “Agency Cost Of Free Cash Flow, Corporate Finance, and Takeovers.” *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.99580.

Jensen, Michael C., and William H. Meckling. 1976. “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure.” *Journal of Financial Economics* 3 (4).

Kim, Chyhe Esther. 1998. “The Effects of Asset Liquidity: Evidence from the Contract Drilling Industry *.” *Journal of Financial Intermediation* 7 (2).

King, David R., Dan R. Dalton, Catherine M. Daily, and Jeffrey G. Covin. 2004. “Meta-Analyses of Post-Acquisition Performance: Indications of Unidentified Moderators.” *Strategic Management Journal* 25 (2).

Kogut, Bruce, and Harbir Singh. 1988. “The Effect of National Culture on the Choice of Entry Mode.” *Journal of International Business Studies* 19 (3).

Laub, J.P. “EU Merger Control and the Acquisition of Distressed Businesses in the Wake of COVID-19.” 2020. https://www.gibsondunn.com/eu-merger-control-and-the-acquisition-of-distressed-businesses-in-the-wake-of-covid-19/.

Lee, Sangjae, and Wu Sung Choi. 2013. “A Multi-Industry Bankruptcy Prediction Model Using Back-Propagation Neural Network and Multivariate Discriminant Analysis.” *Expert Systems with Applications* 40 (8).

Meier, Jean-Marie a., and Henri Servaes. 2014. “Distressed Acquisitions.” *CEPR Discussion Paper No. DP10093*, no. August.

Merton, Robert C. 1974. “On the Pricing of Corporate Debt: The Risk Structure of Interest Rates.” *The Journal of Finance* 29 (2).

Morkoetter, Stefan, and Thomas Wetzer. 2015. “Do Private Equity Funds Always Pay Less? A Synergy-Related Explanation Based on Add-on Acquisitions.” *SSRN*.

Myers, Stewart C. 1984. “The Capital Structure Puzzle.” *The Journal of Finance* 39 (3).

Opler, Tim C., and Sheridan Titman. 1994. “Financial Distress and Corporate Performance.” *The Journal of Finance* 49 (3). https://doi.org/10.1111/j.1540-6261.1994.tb00086.x.

Pastena, Victor, and William Ruland. 1986. “The Merger/Bankruptcy Alternative.” *Accounting Review* 61 (2).

Peres, C, and M Antão. 2017. “The Use of Multivariate Discriminant Analysis to Predict Corporate Bankruptcy: A Review of the Use of Multivariate Discriminant Analysis to

Predict Corporate Bankruptcy: A Review AESTIMATIO." *The IEB International Journal of Finance* 14.

Pitts, Robert A. 1980. "Diversification Through Acquisition." *Strategic Management Journal* 1 (3).

Pulvino, Todd C. 1998. "Do Asset Fire Sales Exist? An Empirical Investigation of Commercial Aircraft Transactions." *Journal of Finance* 53 (3).

Reisz, Alexander S., and Claudia Perlich. 2007. "A Market-Based Framework for Bankruptcy Prediction." *Journal of Financial Stability* 3 (2).

Reuters. "The 10 biggest U.S. retail bankruptcies in 5 years". 2023. https://www.reuters.com/business/retail-consumer/10-biggest-us-retail-bankruptcies-5-years-2023-01-09/.

Rosenzweig, Philip M., Philippe C. Haspeslagh, and David B. Jemison. 1993. "Managing Acquisitions: Creating Value through Corporate Renewal." *The Academy of Management Review* 18 (2).

Shleifer, Andrei, and Robert W. Vishny. 1992. "Liquidation Values and Debt Capacity: A Market Equilibrium Approach." *The Journal of Finance* 47 (4).

Signori, Andrea, and Silvio Vismara. 2018. "M&A Synergies and Trends in IPOs." *Technological Forecasting and Social Change* 127.

Sirower, Mark L. 1999. "The Synergy Trap: How Companies Lose the Acquisition Game." *The Quarterly Journal of Austrian Economics* 2 (1).

Smith, Clifford W., and Jerold B. Warner. 1979. "On Financial Contracting. An Analysis of Bond Covenants." *Journal of Financial Economics* 7 (2).

Sogorski, Lara. “Hidden Champions ALS Arbeitgeber: Was Zeichnet Sie Aus?”. 2023. https://www.faz.net/aktuell/karriere-hochschule/hidden-champions-als-arbeitgeber-was-zeichnet-sie-aus-15480159.html.

Stein, Jeremy C. 1989. “Efficient Capital Markets, Inefficient Firms: A Model of Myopic Corporate Behavior.” *Quarterly Journal of Economics* 104 (4).

Terra, Paulo Renato. 2008. “The Cost of Capital, Corporation Finance and the Theory of Investment.” *Revista de Administração e Contabilidade Da Unisinos* 5 (2).

“The New Financial Capitalists: Kohlberg Kravis Roberts and the Creation of Corporate Value.” 1999. *Choice Reviews Online* 36 (06).

Tykvová, Tereza, and Mariela Borell. 2012. “Do Private Equity Owners Increase Risk of Financial Distress and Bankruptcy?” *Journal of Corporate Finance* 18 (1).

7. Appendix

Table 1: Descriptive statistics (continuous variables)

Variables	N	Mean	Median	SD	Min	Max	Skewness	Kurtosis
Δ EBITDA margin	1231	0.03	0.02	0.18	-1.36	2.36	2.33	47.61
Δ Asset turnover	1231	0.09	0.03	0.71	-4.86	9.10	2.57	38.78
Δ Return on equity	1231	0.07	0.03	0.27	-1.44	2.38	1.40	10.33
% Δ Revenue	1231	0.27	0.12	0.78	-0.97	9.50	5.21	42.74
Experience acquirer	79	8.56	3.00	15.34	0.00	85.00	3.43	12.82
Deal size	79	959.71	260.31	1819.38	53.54	8845.64	3.20	10.28
Deal size (w imputation)	1231	3248.39	482.14	8145.64	10.32	94344.12	4.97	31.83
Cultural distance	79	0.43	0.00	0.95	0.00	4.70	2.68	7.11
Size target	1231	2616.63	396.69	6860.14	7.90	117850.00	6.85	77.90
Age acquirer	79	27.81	17.00	31.04	4.00	143.00	2.23	4.45
Age target	1231	47.79	28.00	47.18	-5.00	354.00	1.75	4.19

Note: Variables before standardization *and Deal size* and *Size target* (in mEUR) are included prior to their logarithmic transformation

Table 2: Absolute and relative frequencies (categorical variables)

Variables	Absolute frequency	Relative frequency (in %)
Ownership type	**79**	**100.00**
1. Private Equity	28	35.44
2. Strategic	51	64.56
Firm industry	**1231**	**100.00**
1. Agriculture, Forestry & Fishing	11	0.89
2. Mining	55	4.47
3. Construction	56	4.55
4. Manufacturing	506	41.10
5. Transportation, Electric, Gas & Sanitary service	236	19.17
5. Wholesale Trade	41	3.33
7. Retail Trade	40	3.25
8. Finance, Insurance & Real Estate	109	8.85
9. Services	177	14.38

Table 3: Correlations and variance inflation factors (VIF)

Variables	VIF	1	2	3	4	5	6	7	8	9	10	11	12
1. Δ EBITDA margin													
2. Δ Asset turnover		0.17***											
3. Δ Return on equity		0.07***	0.02										
4. % Δ Revenue		0.22***	0.03	0.33***									
5. Experience acquirer	1.07	0.09	0.14	0.21*	0.07								
6. Deal size	1.73	0.09	0.01	-0.11	-0.09**	0.136							
7. Ownership type	1.13	-0.14	0.05	0.08	-0.07	0.17	0.0975						
8. Industry target	1.16	-0.12***	0.00	-0.06**	0.00	-0.12	-0.07	-0.1832					
9. Cultural distance	1.12	0.18	0.07	0.03	0.03	0.06	-0.13	0.0053	-0.26**				
10. Size target	1.73	-0.03	-0.01	-0.02	0.09	0.0879	0.61***	0.13	-0.10***	-0.07			
11. Age acquirer	1.16	0.17	0.01	0.00	0.03	0.14	0.0199	0.24**	-0.04	0.07	0.22*		
12. Age target	1.12	-0.05*	-0.02	0.04	-0.08***	0.0426	0.23**	0.17	0.16***	0.08	0.12***	0.12	

Note: Excluded the acquisition dummy
*** p<0.01
** p<0.05
* p<0.1

Table 4: Mutliple Regression (Model 1-8)

Variables	Model 1 (Δ EBITDA margin)	Model 2 (Δ EBITDA margin)	Model 3 (Δ Asset turnover)	Model 4 (Δ Asset turnover)	Model 5 (Δ RoE)	Model 6 (Δ RoE)	Model 7 (% Δ Revenue)	Model 8 (% Δ Revenue)
Constant	0.03 (0.06)	-0.24 (0.34)	0.09 (0.08)	-0.64 (0.43)	0.04 (0.06)	-0.26 (0.32)	0.32 (0.14)**	-0.37 (0.83)
Experience acquirer (std)	0.03 (0.04)	0.00 (0.04)	0.06 (0.05)	0.05 (0.05)	0.06 (0.03)*	0.05 (0.04)	0.06 (0.08)	-0.02 (0.09)
Deal size (ln, std)	0.08 (0.02)*	0.02 (0.06)	-0.01 (0.06)	0.02 (0.08)	-0.02 (0.05)	0.10 (0.06)*	-0.03 (0.11)	0.20 (0.16)
Ownership type	-0.11 (0.07)	-0.11 (0.08)	0.02 (0.10)	0.02 (0.11)	0.03 (0.07)	0.10 (0.08)	-0.11 (0.17)	-0.04 (0.20)
Industry fixed effects		No		Yes		No		No
Cultural distance (std)		0.07 (0.04)*		0.03 (0.05)		0.02 (0.04)		0.17 (0.10)*
Size target (ln, std)		0.05 (0.06)		-0.07 (0.07)		-0.20 (0.05)***		-0.26 (0.13)**
Age acquirer (std)		0.06 (0.04)*		0.00 (0.05)		0.00 (0.04)		0.06 (0.09)
Age target (std)		0.01 (0.03)		0.00 (0.04)		0.05 (0.03)*		0.03 (0.07)
Observations	79	79	79	79	79	79	79	79
R-squared	0.07	0.28	0.02	0.29	0.05	0.30	0.01	0.14
Adjusted R-squared	0.04	0.11	-0.02	0.12	0.01	0.14	-0.03	0.00
F-statistic	1.96	1.67*	0.56	1.69*	1.25	1.82**	0.31	0.67

Note: Standard errors reported in parentheses below the regression coefficients
*** p<0.01
** p<0.05
* p<0.1

Table 5: Multiple Regression (Model 9-17)

Variables	Model 9 (Δ EBITDA margin)	Model 10 (Δ EBITDA margin)	Model 11 (Δ EBITDA margin)	Model 12 (Δ Asset turnover)	Model 13 (Δ Asset turnover)	Model 14 (Δ Asset turnover)	Model 15 (Δ RoE)	Model 16 (Δ RoE)	Model 17 (Δ RoE)
Constant	-0.41 (0.31)	-0.39 (0.03)	-0.25 (0.33)	-0.62 (0.40)	-0.65 (0.40)*	-0.71 (0.43)*	-0.14 (0.30)	-0.15 (0.30)	-0.35 (0.32)
Experience acquirer (std)	-0.01 (0.04)			0.05 (0.05)			0.06 (0.03)*		
Deal size (ln, std)		0.03 (0.04)*			0.03 (0.08)			0.11 (0.06)*	
Ownership type			-0.11 (0.08)			0.03 (0.10)			0.11 (0.08)
Industry fixed effects	No	No	No	Yes	Yes	Yes	No	No	No
Cultural distance (std)	0.08 (0.04)**	0.08 (0.04)**	0.07 (0.04)*	0.03 (0.05)	0.04 (0.05)	0.04 (0.05)	0.00 (0.04)	0.02 (0.04)	0.02 (0.04)
Size target (ln, std)	0.05 (0.04)	0.03 (0.05)	0.03 (0.04)	-0.06 (0.06)	-0.07 (0.07)	-0.06 (0.05)	-0.13 (0.04)***	-0.18 (0.05)***	-0.14 (0.04)***
Age acquirer (std)	0.05 (0.04)	0.05 (0.04)	0.06 (0.04)*	0.00 (0.05)	0.01 (0.05)	0.00 (0.05)	0.00 (0.04)	0.02 (0.03)	0.01 (0.04)
Age target (std)	0.01 (0.03)	0.01 (0.03)	0.01 (0.03)	0.00 (0.04)	0.00 (0.04)	0.00 (0.04)	0.05 (0.03)*	0.05 (0.03)*	0.05 (0.03)*
Observations	79	79	79	79	79	79	79	79	79
R-squared	0.26	0.27	0.28	0.29	0.27	0.27	0.26	0.26	0.24
Adjusted R-squared	0.12	0.12	0.14	0.14	0.13	0.13	0.11	0.11	0.09
F-statistic	1.78*	1.80*	1.97**	2.01**	1.88**	1.87**	1.72*	1.72**	1.58

Note: Standard errors reported in parentheses below the regression coefficients
*** p<0.01
** p<0.05
* p<0.1

Table 6: Multiple Regression (Model 18-24)

Variables	Model 18 (% Δ Revenue)	Model 19 (% Δ Revenue)	Model 20 (% Δ Revenue)	Model 21 (Δ EBITDA margin)	Model 22 (Δ Asset turnover)	Model 23 (Δ RoE)	Model 24 (% Δ Revenue)
Constant	-0.49 (0.77)	-0.41 (0.76)	-0.40 (0.82)	-0.41 (0.31)	-0.66 (0.40)*	-0.19 (0.31)	-0.48 (0.76)
Experience acquirer (std)	0.03 (0.09)*						
Deal size (ln, std)		0.20 (0.15)					
Ownership type			-0.06 (0.20)				
Industry fixed effects	No	No	No	No	Yes	No	No
Cultural distance (std)	0.16 (0.09)*	0.17 (0.10)*	0.15 (0.10)	0.08 (0.04)**	0.04 (0.05)	0.01 (0.04)	0.16 (0.10)*
Size target (ln, std)	-0.16 (0.09)*	-0.27 (0.13)**	0.16 (0.10)	0.05 (0.04)	-0.06 (0.05)	-0.13 (0.04)***	-0.16 (0.10)*
Age acquirer (std)	0.04 (0.09)	0.05 (0.09)	0.05 (0.09)	0.05 (0.04)	0.01 (0.00)	0.01 (0.04)	0.04 (0.09)
Age target (std)	0.03 (0.07)	0.02 (0.7)	0.03 (0.7)	0.01 (0.03)	0.00 (0.04)	0.05 (0.03)*	0.03 (0.07)
Observations	79	79	79	79	79	79	79
R-squared	0.19	0.14	0.12	0.26	0.27	0.22	0.11
Adjusted R-squared	0.01	-0.04	-0.06	0.13	0.14	0.08	-0.04
F-statistic	1.05	0.79	0.65	1.96**	2.05**	1.54	0.71

Note: Standard errors reported in parentheses below the regression coefficients
*** p<0.01
** p<0.05
* p<0.1

Table 7: Multiple Regression with interactions and control group (Model 25-27)

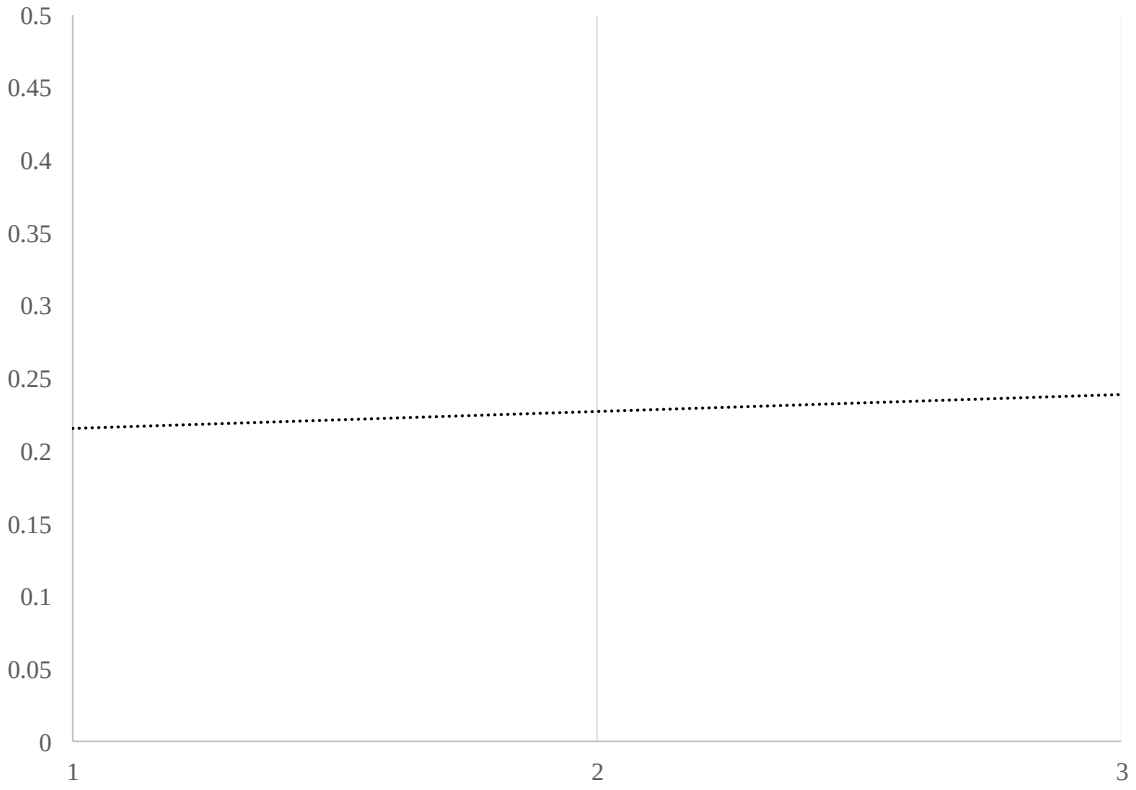
Variables	Model 25 (Δ EBITDA margin)	Model 26 (Δ Asset turnover)	Model 27 (Δ RoE)
Constant	0.05 (0.05)	0.02 (0.21)	0.01 (0.07)
Deal size (ln, std)	-0.13 (0.02)***	-0.15 (0.09)*	-0.50 (0.03)***
Deal size (ln, std) * Acquisition dummy	0.12 (0.04)***	0.12 (0.17)	0.57 (0.06)***
Industry fixed effects	No	No	No
Size target (ln, std)	0.12 (0.02)***	0.15 (0.09)	0.48 (0.03)***
Size target (ln, std) * Acquisition dummy	-0.02 (0.03)	-0.13 (0.14)	-0.59 (0.05)***
Age target (std)	-0.01 (0.01)*	-0.03 (0.02)	0.02 (0.01)**
Age target (std) * Acquisition dummy	0.02 (0.02)	0.07 (0.07)	0.04 (0.03)*
Acquisition dummy	-0.09 (0.02)***	0.01 (0.10)	0.00 (0.03)
Observations	1231	1231	1231
R-squared	0.11	0.02	0.20
Adjusted R-squared	0.10	0.01	0.19
F-statistic	9.75***	1.42	20.65***

Note: Standard errors reported in parentheses below the regression coefficients
*** p<0.01
** p<0.05
* p<0.1

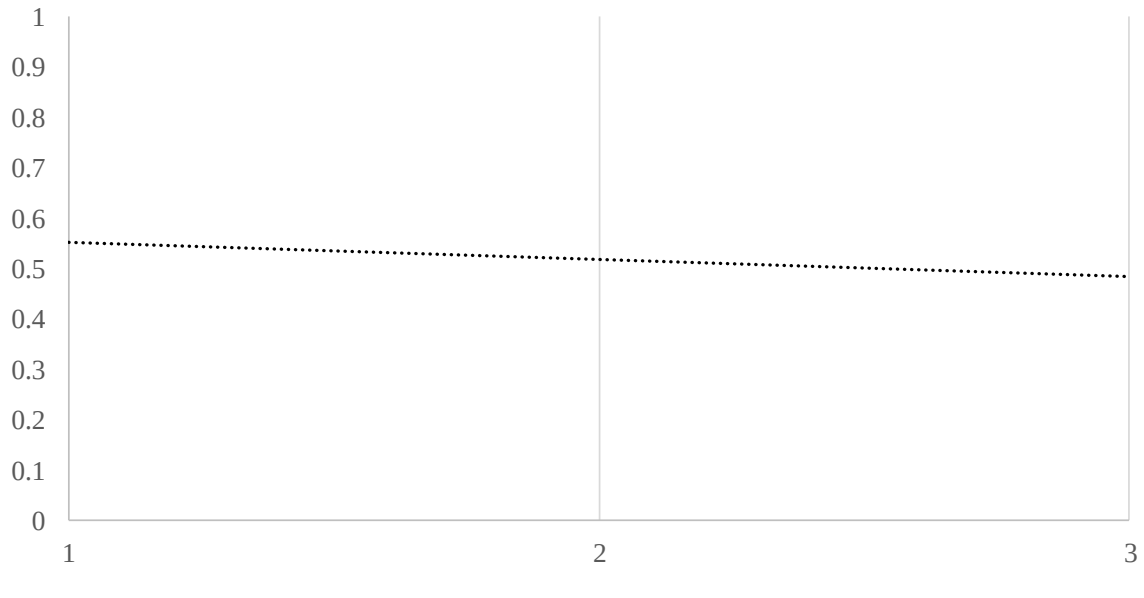
Table 8: Absolute and relative frequencies (origin of foreign firms)

Country of origin (Acquirer)	Absolute frequency	Relative frequency (in %)	Country of origin (Target)	Absolute frequency	Relative frequency (in %)
Total	**79**	**100.00**	*Total*	**79**	**100.00**
Belgium	1	1.27	Belgium	2	2.53
Bermuda	1	1.27	Cyprus	2	2.53
Switzerland	1	1.27	France	9	11.39
Cyprus	7	8.86	Germany	10	12.66
Germany	8	10.13	Italy	8	10.13
Spain	5	6.33	Lithuania	2	2.53
France	3	3.80	Luxembourg	1	1.27
United Kingdom	19	24.05	Netherlands	1	1.27
Indonesia	2	2.53	Norway	2	2.53
Italy	11	13.92	Poland	7	8.86
Lithuania	2	2.53	Russian Federation	9	11.39
Luxembourg	4	5.06	Spain	5	6.33
Mexico	1	1.27	Sweden	2	2.53
Norway	1	1.27	Switzerland	1	1.27
Poland	5	6.33	Turkey	1	1.27
Russian Federation	3	3.80	Ukraine	1	1.27
Sweden	2	2.53	United Kingdom	16	20.25
Singapore	1	1.27			
Turkey	1	1.27			
Ukraine	1	1.27			
United States of America	1	1.27			
Virgin Islands (British)	1	1.27			

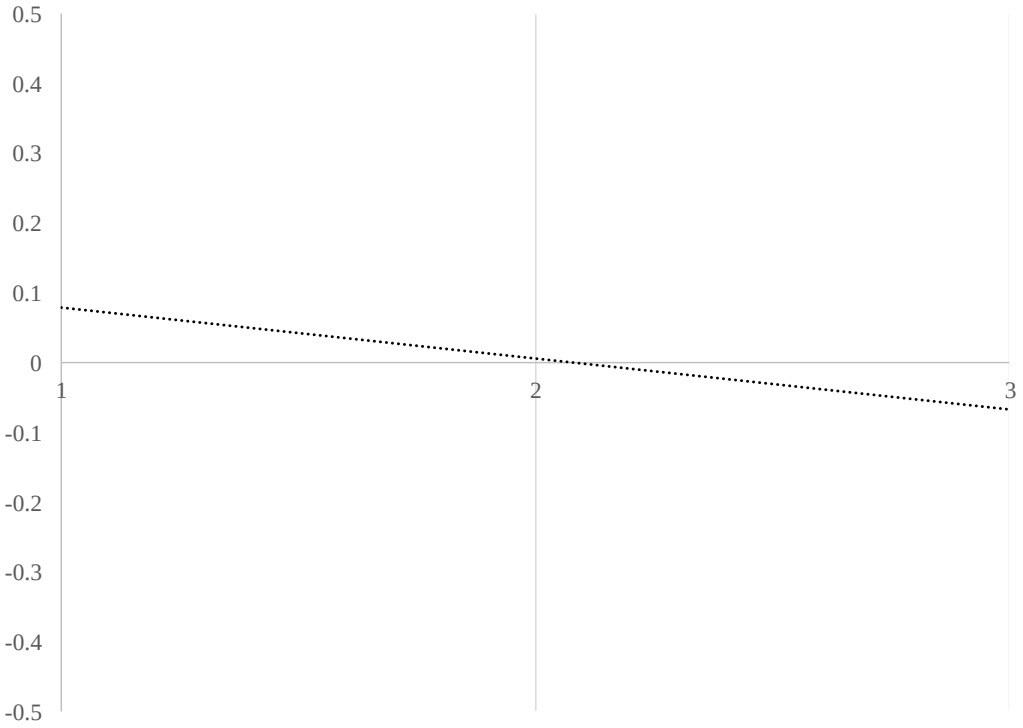
Graph 1: EBITDA margin trendline (Two years prior to acquisition)



Graph 2: Asset turnover trendline (Two years prior to acquisition)



Graph 3: RoE trendline (Two years prior to acquisition)



Graph 4: Revenue trendline (Two years prior to acquisition)